

front lower bolt on the power steering pump will not come all the way out. Wire the power steering pump out of the way.

15. Remove the 4 bolts retaining the oil pan to the front cover. Remove the crankshaft damper retaining bolt and remove the damper, using a suitable puller.

16. Disconnect the Electronic Variable Orifice (EVO) sensor and oil-sending unit. Position the EVO sensor and oil pressure sending unit harness out of the way.

17. Disconnect the EGR tube from the right exhaust manifold. Disconnect the exhaust pipes from the exhaust manifolds. Lower the exhaust pipes and hang with wire from the crossmember.

18. Remove the bolt retaining the starter wiring harness to the rear of the right cylinder head. Lower the vehicle.

19. Remove the bolts and the stud bolts retaining the valve covers to the cylinder heads and then remove the covers.

20. Disconnect the accelerator, cruise control and throttle valve cables. Remove the accelerator cable bracket from the intake manifold and position out of the way.

21. Disconnect the vacuum hose from the throttle body elbow vacuum port, both oxygen sensors and the heater supply hose.

22. Remove the 2 bolts retaining the thermostat housing to the intake manifold and position the upper hose and thermostat housing out of the way.

➔ **The two thermostat housing bolts also retain the intake manifold.**

23. Remove the 9 bolts retaining the intake

manifold to the cylinder heads and remove the intake manifold and gaskets.

24. Remove the 7 stud bolts and 4 bolts retaining the front cover to the engine and remove the front cover.

25. Remove the timing chains; refer to the procedure in this Section.

26. Remove the 10 bolts retaining the left cylinder head to the engine block and remove the head.

➔ **The lower rear bolt cannot be removed due to interference with the brake vacuum booster. Use a rubber band to hold the bolt away from the engine block.**

27. Remove the ground strap, 1 stud, and 1 bolt retaining the heater return line to the right cylinder head.

28. Remove the 10 bolts retaining the right cylinder head to the engine block and remove the head.

➔ **The lower rear bolt cannot be removed due to interference with the evaporator housing. Use a rubber band to hold the bolt away from the engine block.**

29. Clean all gasket-mating surfaces. Check the cylinder head and engine block for flatness. Check the cylinder head for scratches near the coolant passage and combustion chamber that could provide leak paths.

To install:

30. Rotate the crankshaft counterclockwise 45 degrees. The crankshaft keyway should be at the 9 o'clock position viewed from the front of the engine. This ensures that all pistons are below the top of the engine block deck face.

31. Rotate the camshaft to a stable position where the valves do not extend below the head face.

32. Position new head gaskets on the engine block. Install the lower rear bolts on both cylinder heads and retain with rubber bands as explained during the removal procedure.

➔ **New cylinder head bolts must be used whenever the cylinder head is removed and reinstalled. The cylinder head bolts are a torque-to-yield design and cannot be reused.**

33. Position the cylinder heads on the engine block dowels, being careful not to score the surface of the head face. Apply clean oil to the head bolts, remove the rubber band from the lower rear bolt and install all bolts hand-tight.

34. Tighten the head bolts as follows:

a. Tighten the bolts, in sequence, to 25–30 ft. lbs. (35–45 Nm).

b. Rotate each bolt, in sequence, 85–95 degrees.

c. Rotate each bolt, in sequence, an additional 85–95 degrees.

35. Position the heater return hose and install the 2 bolts. Rotate the camshafts using the flats matched at the center of the camshaft until both are in time. Install cam positioning tools T91P-6256-A or equivalent, on the flats of the camshafts to keep them from rotating.

36. Rotate the crankshaft clockwise 45 degrees to position the crankshaft at TDC on No. 1 cylinder.

➔ **The crankshaft must only be rotated in the clockwise direction and only as far as TDC.**

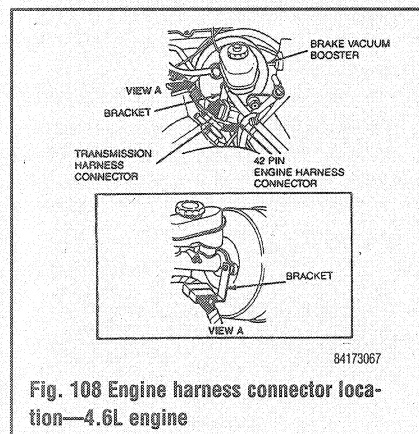


Fig. 108 Engine harness connector location—4.6L engine

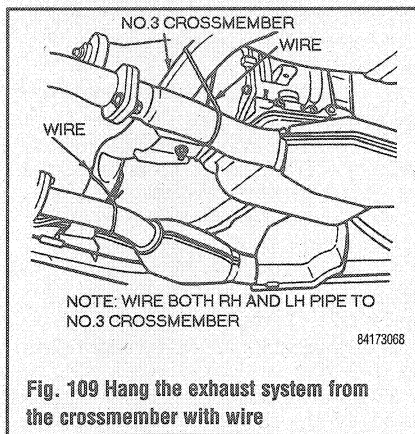


Fig. 109 Hang the exhaust system from the crossmember with wire

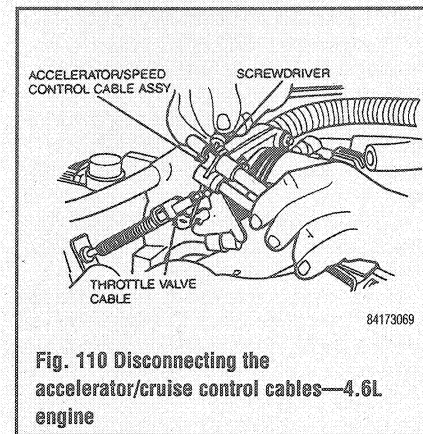


Fig. 110 Disconnecting the accelerator/cruise control cables—4.6L engine

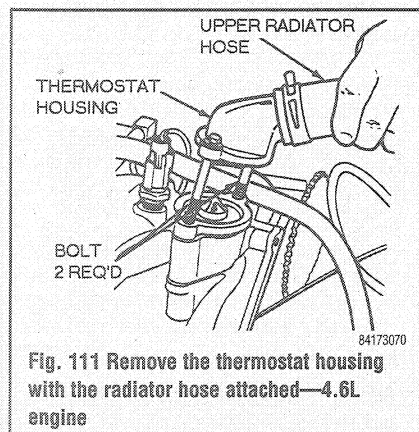


Fig. 111 Remove the thermostat housing with the radiator hose attached—4.6L engine

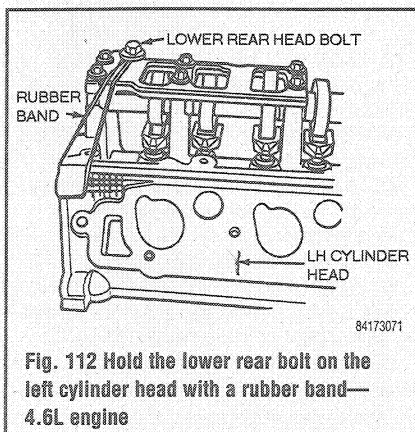


Fig. 112 Hold the lower rear bolt on the left cylinder head with a rubber band—4.6L engine

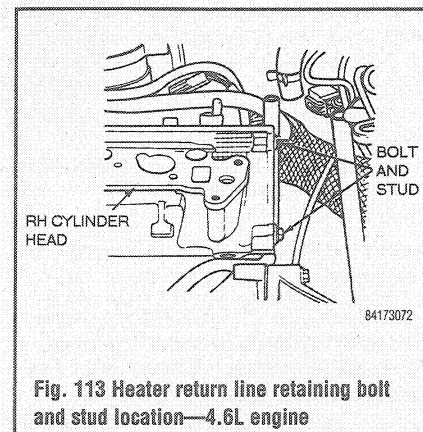


Fig. 113 Heater return line retaining bolt and stud location—4.6L engine